

Appl. No. 10/756,629
Amdt. Dated November 3, 2005
Reply to Office action of October 13, 2005

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Remarks/Arguments

The specification and Abstract are being amended to correct a misspelling, which correction has also been made in the claims.

Applicants note with appreciation that the Examiner has indicated that claims 3-4, 6, and 16-17 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Accordingly, applicants have thus amended each of these claims. Claims 3 and 4 have also been amended to improve their form and accuracy. Allowance of now independent claims 3-4, 6, and 16-17 is therefore requested.

Claims 1-2, 5, and 7-15 stand rejected, 35 USC 102(b), as anticipated by Yu et al patent 6,094,580 (hereinafter Yu), and claims 9 and 18-21 stand rejected, 35 USC 103(a), as obvious in view of Yu and an article by applicant Luss. In response thereto applicants have canceled claims 2, 13-15, and 17-21 to reduce the issues to be considered in this application, have canceled claim 12, but, in effect, replaced it with a new claim 24 dependent on claim 1, and have added new claims 22 and 23 also dependent on claim 1 further to protect their invention. Further claims 1 and 5 have been amended to clearly recite that applicants' invention deals with operational cellular wireless systems.

Applicants and Yu are both directed to problems in an area for cellular wireless service served by multiple base stations with the area partitioned into numerous small bins. Accordingly, applicants and Yu have disclosures which are the similar in some respects. However, the problems that applicants and Yu are concerned with and their methods for resolving those problems are entirely distinct.

Applicants deal with the problem of estimating the offered load or demand in each of the bins in an operating cellular wireless system. Yu, on the other hand, does not deal with or have any disclosure relevant to a wireless system after it is in operation. The problem Yu addresses is, given demand estimates for when the system will be operating, finding optimal locations for the base stations.

Applicants' invention utilizes three inputs, namely (i) measurement of actual loads at each of the base stations in the operating system, (ii) a probabilistic model that estimates the expected load of each bin that is served by each of the base stations; and (iii) approximation of demands across all bins (based on demographic data and traffic patterns). These three different inputs are clearly seen in Fig. 1 of applicants' application. The first input is described, starting at paragraph 17 at page 6, the second input at paragraph 21 at page 8, and the third input at paragraph 23, at page 9 of applicants' specification.

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Using these three inputs, in accordance with applicants' invention an equitable resource model is formulated, using the equations 1-9, set forth in applicants' specification to formulate the model, which is formulated by equations 10a-10c. Applicants' inventive contribution to the art is precisely the use of these three inputs for the formulation of the model. The Examiner, in discussing applicants' claim 1, refers to Yu as disclosing "solving an equitable allocation resource model". However, what Yu solves is not the equitable resource allocation model as defined in claim 1 and by equations 10a-10c, just as Yu does not teach determining offered load estimates in an operational cellular wireless system.

Applicants' specific model is solved by a known lexicographic minimax algorithm, and applicants for the purposes of this application do not claim originality for that algorithm. However, applicants do assert that the formulation of the equitable resource allocation model to enable offered load estimates to be determined for operating cellular wireless systems by solving that precisely defined model is non-obvious and patentable.

The similarity with Yu is only based on the fact that, for a completely different purpose, Yu also utilizes demand estimates in the bins. Yu provides a demand module (column 4, line 37-column 5, line 29) with different alternatives of approximation of demands in bins. However, Yu does not use actual base station measurements since Yu is concerned with where to locate base stations and at that stage measurements are not available.

Applicants specifically dispute the Examiner's assertions which are based on the Examiner's considering that Yu obtains actual measurements of an operating system. Further, applicants disagree with the Examiner's assertion that Yu, with respect to prior claim 12, disclosed a method of determining weights for performing frequency assignment. The citations relied upon by the Examiner, at columns 1, 2, and 13-20, are all concerned with Yu's solution to the finding of optimal locations for the placement of base stations, not to frequency allocation. However, claim 12 has been canceled and replaced by new dependent claim 24 to emphasize that applicants' step of performing frequency assignment among a plurality of base stations in an operating cellular wireless system is based upon the three inputs to their equitable resource allocation model and its solution, as recited in parent claim 1.

New dependent claim 22 adds to claim 1 that the probability computing step utilizes applicants' equation 1 while new claim 23 adds to claim 1 that the probability computing step utilizes equations 2a, 2b, and 3a-3c. Applicants also want to point out to the Examiner that the recitations in dependent claim 7 are supported by their equation 6, and those of claim 8 are supported by equations 7, 8a, 8b, 9, and 7. New claim 25, dependent on allowable claim 6, adds that the resource constraints are given by equation 5.

Accordingly, applicants respectfully submit that claims 1, 5, 9, 10, and 11, as amended, and new claims 22 -25 are clearly patentable. Reconsideration and allowance

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of claims 1, 5, 9, 10 and 11, and favorable consideration and allowance of new claims 22-25 are therefore requested.

It is believed that this application is now in condition for allowance, and such action is also respectfully requested. However, if the Examiner deems it would in any way expedite the prosecution of the application, the Examiner is invited to telephone applicants' attorney at the number set forth below.

Respectfully submitted,

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